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EXAMINER

KOVALICK, VINCENT E

ART UNIT	PAPER NUMBER
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2673

DATE MAILED: 05/12/2004

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/438,885

Applicant(s)

MASAZUMI ET AL.

Examiner

Vincent E Kovalick

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24 and 25 is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☒ Claim(s) 22 and 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to Applicant's Amendment dated January 28, 2004 in response to USPTO Office Action dated October 23, 2003. The amendments to claims 10-11, 16-17; the addition of new claims 22-25, and Applicant's Remarks have also been considered and entered in the record.

o Regarding claims 1-9, 11-15 and 18-21, Applicant's arguments filed 1/28/04 have been fully considered but they are not persuasive.

Relative to Applicant's remark "Ueno et al. patent does not disclose or suggest a device including a controller for controlling the driver to drive at least a part of the liquid crystal display selectively using one of a first drive method and second drive method which are different from each other in operational principal of the liquid crystal material"; Ueno et al. **teaches** first and second drive methods (col. 3, lines 9-21) directed to a liquid crystal display including a system controller applicable to the entire LCD system (col. 12, lines 24-41). Consistent with the language of claim 1, Ueno et al. does teach a LCD with the means to control two different driving methods; the first wherein the entire display screen is simultaneously scanned, and the second wherein only a portion of the display screen is scanned.

Regarding Applicant's remarks relative to claim 15, Ueno et al. teaches the means to address the entire display screen and also address only a portion of the display screen.

Addressing the entire display screen would facilitate application of the 'reset' mode, once the reset has been done, setting the address of the desired portion of the display screen would lock in

the address of the said desired portion of the display screen, and facilitate the refresh mode.

without having to go back to the step (a).

Applicant's remarks relative to claim 10, 16 and 17 are rendered moot in light of the amendments to said claims 10, 16 and 17.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 8-11, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueno et al. (USP 6,320,560).

Relative to claim 1, Ueno et al. **teaches** a Liquid Crystal Display (LCD) device (col. 9, lines 47-67; col. 10, lines 1-67 and col. 11, lines 1-47); Ueno et al. further **teaches** a display device comprising: a liquid crystal display (LCD) having a liquid crystal material (col. 12, lines 24-25); a driver for driving said LCD (col. 12, lines 25-26 and 31-34); a controller for controlling said driver (col. 12, lines 35-36 and 39-40) to drive at least a part of said LCD by selectively using one of either a first drive method and a second drive method that are different from each other in operational principle of said liquid crystal material (col. 3, lines 10-12 and 14-20).

The difference between the teaching of Ueno et al. and that of the instant invention is that the teaching of Ueno et al. is directed to a driving circuit that addresses the problem of

deterioration in a display quality as opposed to the teaching of the instant invention that relates to a reflective LCD display device with a memory effect and a driving method thereof.

It would have been obvious to a person of ordinary skill in the art at the time of the invention that the teaching of Ueno et al. addresses the limitations of claims 1 of the instant invention.

Regarding claims 8-9, Ueno et al. further **teaches** said display device wherein low contrast formation of an image on said LCD is possible by using said first drive method; and high contrast formation of an image on said LCD is possible by using a second drive method; wherein a first contrast of an image displayed on said LCD by using said first drive method is lower than a second contrast of an image displayed on said LCD by using said second drive method (col. 3, lines 35-40; col. 7, lines 53-67 and col. 8, lines 4-6).

Regarding claims 10-11, Ueno et al. further **teaches** a controller for controlling said driver to write said image to said LCD a plurality of times to form at least one image in at least one portion of said LCD, and wherein said controller is capable of changing the number of times the image is written for forming the at least one image (col. 2, lines 50-61).

Regarding claim 18, images displayed on a liquid crystal display, said images having multiple values is well known and in common practice in the art; in that this well known it would have been obvious to a person of ordinary skill in the art at the time of the invention that said LCD can display a two-value image when said second drive method is used; examples are: an image with multiple contrast values, or an image displayed in different sizes etc.

Relative to claim 19, it is a common practice and well known in the art that the drive method used to generate a displayed image includes inputting video data signals that make up the image to the display

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Because this practice is common and well known in the art, it would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Ueno et al. the feature wherein the LCD can display a multi-tone image when the first drive method is used by inputting the data signals representative of a multi-tone image.

4. Claims 2, 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable Ueno et al. as applied to claim 1 in item 3 hereinabove, and further in view of Huang et al. (USP 5,748,277) Relative to claim 2, Ueno et al. **does not teach** said display device wherein the said LCD is capable of keeping an image, having been formed thereon without consuming electric power: or wherein the image formed on the LCD by using a second drive method is capable of remaining without consumption of electric power.

Ueno et al. teaches liquid crystal display driving means which solve the problem of deterioration in display quality.

Huang et al. **teaches** a visual display utilizing a chiral nematic, (cholesteric) reflective bistable liquid crystal material and an electronic drive system for activating the display using efficient operation to provide high speed updating of the display (col. 1, lines 7-11; col. 2, lines 43-67; col. 3, lines 1-36 and Fig. 7); Huang et al. further **teaches** said LCD wherein the LCD is capable of keeping an image having been formed thereon without consuming electric power (col. 3, lines 15-17 and col. 6, lines 7-11).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Ueno et al. the feature as taught by Huang et al. in order to provide an LCD that does not require continuous updating or refreshing, resulting in system power savings.

Regarding claim 5, Huang et al. further **teaches** a LCD wherein a first time period required to renew an image on said LCD by using said first drive method is longer than a second time period required to renew an image on said LCD by using said second drive method (col. 16, lines 15-16 and 23-24).

Relative to claim 6, Huang et al. **teaches** said LCD wherein a first electric power consumption required to keep an image on said liquid crystal display by using said first drive method is greater than a second elected power consumption required to keep an image on said LCD by using said second drive method (col. 5, lines 58-67 and col. 6, lines 1-11).

5. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable Ueno et al. as applied to claim 2 in item 4 hereinabove, and further in view of Huang et al.

Relative to claims 3-4, Ueno et al. **does not teach** said display device wherein said liquid crystal material comprises a cholesteric liquid crystal material; and wherein the cholesteric liquid crystal material comprises a chiral nematic liquid crystal material.

Ueno et al. teaches liquid crystal display driving means which solve the problem of deterioration in display quality.

Huang et al. **teaches** display device wherein said liquid crystal material comprises a cholesteric liquid crystal material; and wherein the cholesteric liquid crystal material comprises a chiral nematic liquid crystal material (col. 1, lines 7-11 and col. 2, lines 45-48 and 55-60).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device a taught by Ueno et al. the features as further taught by Huang et al. in order to provide the means for high-speed updating of the display (Huang et al. col. 1, lines 6-10).

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6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable Ueno et al. taken with Huang et al. as applied to claim 6 in item 5 hereinabove.

The comments relative to claim 2 in item 4 hereinabove are applicable to claim 7 as well.

7. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable Ueno et al. as applied to claim 10 in item 3 hereinabove, and further in view of Haung et al.

The comments relative to claims 3-4 in item 5 hereinabove are applicable to claims 12-13 as well.

Regarding claim 14, it is a common practice and well know in the art for a LCD to comprise a plurality of scan electrodes and a plurality of data electrodes.

Because this practice is common and well know in the art, it would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Ueno et al. the feature of providing a plurality of scan electrodes and a plurality of data electrodes.

8. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueno et al. taken with Haung et al. as claim 15 is applied to claim 14 in item 7 hereinabove, and claims 16 and 17 as independent claims; and further in view of Knapp (USP 6,069,603).

Regading claims 15-17, Ueno et al. taken with Haung et al. **does not teach** said display where device wherein said controller is capable of controlling said driver so as to execute the steps of:
(a) addressing a plurality of said scan electrodes and a plurality of said data electrode to reset an areas of said liquid crystal display defined by the plurality of scan electrodes and the plurality of data electrodes;

(b) addressing at least some of said plurality of said scan electrodes sequentially;

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(c) addressing selected ones of said data electrodes synchronizing with the sequential addressing of the scan electrodes in the step (b); and

(d) repeating the steps (b) and (c) a plurality of time without interposing the step (a).

Ueno et al. taken with Haung et al. teaches a liquid crystal display driving means which solve the problem of deterioration in display quality, said display keeping an image having been formed thereon without consuming electric power.

Knapp **teaches** a method of driving a matrix display device (col. 2, lines 66-67 and col. 3, lines 1-63); Knapp further **teaches**: (a) addressing a plurality of said scan electrodes and a plurality of said data electrode to reset an areas of said liquid crystal display defined by the plurality of scan electrodes and the plurality of data electrodes;

(b) addressing at least some of said plurality of said scan electrodes sequentially;

(c) addressing selected ones of said data electrodes synchronizing with the sequential addressing of the scan electrodes in the step (a); and

(d) repeating the steps (b) and (c) a plurality of time without interposing the step (a).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Ueno et al. taken with Haung et al. the feature as taught by Knapp in order to provide the means to refresh the display device without having to exercise the addressing step; it being understood the refresh process improves the image contrast.

Regarding claim 17, Huang et al. further **teaches** displaying an image that corresponds to image data on a LCD without applying electrical voltage to any one the scanning electrode and data electrodes (col. 1, lines 43-49).

9. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable Ueno et al. as applied to claim 1 in item 3 hereinabove, and further in view of Nomura et al.

Regarding claim 20, Ueno et al. **does not teach** said display device wherein each of said first drive method and said second drive method has a resetting period for resetting said LCD, a selecting period for selecting at least part of said LCD, and a maintaining period for maintaining a display on said LCD.

Ueno et al. teaches liquid crystal display driving means that solve the problem of deterioration in display quality.

Nomura et al. **teaches** a drive method for a LCD device that applies the voltage of the difference of a data signal and scanning signal having at least a reset period, a selection period and a non-selection period in one frame on a chiral nematic LCD having at least two stable stages (col. 2, lines 54-67 and col. 3, lines 1-37); Nomura et al. further **teaches** said display device wherein each of said first drive method and said second drive method has a resetting period for resetting said LCD, a selecting period for selecting at least part of said LCD, and a maintaining period for maintaining a display on said LCD (col. 9, lines 18-44).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Ueno et al. the feature as taught by Nomura et al. in order to offer a LCD device and its drive method and the drive circuit used therein which are capable of not generating a large voltage difference in the scanning signal waveform and the data signal waveform while still improving the display characteristics (Nomura et al., col. 2, lines 40-45).

10. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable Ueno et al. as applied to claim 18 in item 3 hereinabove, and further in view of Yamazaki et al. (USP 6,266,113).

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Relative to claim 21, Ueno et al. **does not teach** said display device wherein said two-value image is formed on said display by said controller selecting one of a first waveform for driving liquid crystal material and said display to a light scattering state and a second waveform for driving liquid crystal material of said display to a light transmitting state, in accordance with image data.

Ueno et al. teaches a liquid crystal display driving means that solve the problem of deterioration in display quality.

Yamazaki et al. **teaches a** reflection type liquid crystal display device (col. 3, lines 54-67 and col. 4, lines 1-23); Yamazaki et al. further **teaches teach** said display device wherein said two-value image is formed on said display by said controller selecting one of a first waveform for driving liquid crystal material and said display to a light scattering state and a second waveform for driving liquid crystal material of said display to a light transmitting state, in accordance with image data (col. 4, lines 13-18).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Ueno et al. the feature as taught by Yamazaki et al. in order to provide a reflection type LCD device which has excellent scattering characteristics and which can be driven by a remarkable low voltage so that it can realize a display of high quality in high contrast and in an excellent color purity (Yamazaki et al. col. 3, lines 54-59).

Allowable Subject Matter

11. Claims 22 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 22, the major difference between the teachings of the prior art of record (Ueno et al., USP 6,320,560; Huang et al., USP 5,748,277 and Knapp, USP 6,069,603) and that of the instant invention is that said prior art of record **does not teach** the method step wherein repeating the steps of (b) addressing at least some of said plurality of said scan electrodes sequentially and (c) addressing selected ones of said data electrodes synchronizing with the sequential addressing of the scan electrodes in the step (b) to form an image; comprises repeating the steps (b) and (c) as long as image data upon which said image is based remains unchanged and a predetermined number of repetitions have not occurred.

Relative to claim 23, the major difference between the teachings of the said prior art of record and that of the instant invention is that said prior art of record **does not teach** the method step (a) addressing at least some of said plurality of scan electrodes sequentially; and (b) addressing at least some of said plurality of said scan electrodes sequentially, comprises repeating the steps (a) and (b) unless said image data has changed or a predetermined number of repetitions have occurred.

12. Claims 24 and 25 are allowed.

13. The following is an examiner's statement of reasons for allowance:

Regarding claim 24, the major difference between the teachings of the said prior art of record

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and that of the instant invention is that said prior art of record **does not teach** a liquid crystal display having a liquid crystal material with a memory effect; a driver for applying a pulse voltage to the liquid crystal display; and a controller for controlling said drive, when driving the liquid crystal display to display data thereon, to apply a pulse voltage having a pulse width that is a plurality of times shorter than a pulse width which is necessary for displaying the data on the LCD.

Relative to claim 25, the major difference between the teachings of the said prior art of record and that of the instant invention is that said prior art of record **does not teach** a liquid crystal display having a liquid crystal material with a memory effect; a driver for applying a pulse voltage to the liquid crystal display; and a controller for controlling said driver, when driving the liquid crystal display to display data thereon, to apply a plurality of pulse voltages each having a pulse width shorter than a pulse width which is necessary for displaying the data on the LCD.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U. S. Patent No.	5,598,229	Okada et al.
U. S. Patent No.	5,384,067	Doane et al.
U. S. Patent No.	5,274,484	Mochizuki et al.
U. S. Patent No.	5,251,048	Doane et al.

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Responses

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vincent E Kovalick whose telephone number is 703 306-3020. The examiner can normally be reached on Monday-Thursday 7:30- 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 703 305-4938. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 306-0377.



Vincent E. Kovalick
May 4, 2004



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